



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,636	03/22/2005	Lionel Oisel	PF020128	7137

24498 7590 10/09/2007  
JOSEPH J. LAKS, VICE PRESIDENT  
THOMSON LICENSING LLC  
PATENT OPERATIONS  
PO BOX 5312  
PRINCETON, NJ 08543-5312

EXAMINER
----------

BLACK, LINH

ART UNIT	PAPER NUMBER
----------	--------------

2163

MAIL DATE	DELIVERY MODE
-----------	---------------

10/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/528,636	<b>Applicant(s)</b> OISEL ET AL.	
	<b>Examiner</b> LINH BLACK	<b>Art Unit</b> 2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/22/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

Claims 1-6 are pending in the application. Claim 1 is an independent claim.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 recites the limitation "**the** potential of node", "**the** potential of each edge", "**the** energy" in claim 1. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo et al. (US 5821945), in view of Oguz et al. (US 7054367), and further in view of Geiger et al. (US 7212201).

Art Unit: 2163

As per claim 1, Yeo et al. teach:

Method of clustering images of a video sequence consisting of shots and represented by a graph-like structure – fig. 1;

a node of the graph representing a shot or a class of shots defined by key images and the nodes being connected by edges – col. 4, 1<sup>st</sup> paragraph (each node represents a cluster of shots, which are considered a scene in the general sense. A directed edge is drawn from node U to node W if there is a shot represented by node U that immediately precedes some shot represented by node W).

comprising the following iteration: - selection of an edge  $a_k$  connecting nodes  $n_i$  and  $n_j$  – col. 4, lines 23-29; col. 5, lines 32-52 (the nodes capture the core contents of the video while the edges capture its structure. The browsing approach thus is based on both content and structure of a complex video selection); col. 9, last paragraph (iteration). calculation of the potential of node  $n_m$ , merging of the two nodes  $n_i$  and  $n_j$ , the attributes of the key images defining the class of shots of node  $n_i$  and those of the key images defining the class of shots of node  $n_j$ – col. 2, lines 39-55 (long sequences of related shots can be telescoped into a small number of key frames which represent the repeatedly appearing shots in the scene); col. 9, lines 3-18 (the present system algorithm first groups the pair of shots by their proximity values; “proximity value” can be interpreted as equivalent to the “potential”); col. 6, lines 14-32 (clustering of shots is equivalent to merging of nodes); col. 8, line 43 to col. 9, line 18; col. 5, lines 32-57 (the shots that exhibit visual, spatial and temporal similarities are then clustered into scenes...the primitive attributes of the shots contribute the major clustering criteria at

Art Unit: 2163

the initial stage of the scene). Yeo et al. teach grouping shots by their proximity values and it is preferred to have a shot left as a single cluster/new cluster than to have it grouped into other clusters not in close match – col. 9, 1<sup>st</sup> paragraph. Yeo et al. do not suggest distance or temporal distance of the key images/frames. Oguz et al. teach attributes are compared to at least one length threshold to detect a scene change in the MPEG video sequence – col. 6, 2<sup>nd</sup> paragraph; compute a degree of coincidence between significant edges in a current frame and significant edges in a prior frame to within a distance and temporal distance ...- col. 8, 2<sup>nd</sup> paragraph. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Yeo's teaching and Oguz's teaching to allow different categorization/clustering method to be utilized. However, Yeo and Oguz do not suggest the sum of the potentials of the nodes and of the edges, is less than the energy of the graph before merging. Geiger et al. teach the result of merging two nodes in the graph shown in fig. 7b; the way that the edge weights are defined, the minimum cut corresponds to the optimal segmentation that is it has the minimum sum of equation – col. 6, lines 29-36; the weight of an edge connecting some node x and a merged node y is given by the sum of weights of all edges that connect node x and all nodes that are merged into y – col. 20, lines 23-39. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Yeo's teaching, Oguz's teaching, and Geiger's teaching in order to improve efficiency when nodes that are likely never be separated, thus, merge the two nodes into a cluster for better manipulation of data.

As per claim 2, Yeo et al. teach:

wherein the graph is initialized by assigning a node to each shot and in that edges are created from one node to another node if the shots relating to these nodes are separated by a predetermined maximum number T of shots – col. 4, 1<sup>st</sup> paragraph; col. 2, lines 3-23; col. 8, lines 27-41 (It is important to balance the two goals: to preserve as much of the temporal variations as possible and to reduce the computing load needed to process many video frames in a given shot. In the present system, the inventors chose a good but nevertheless greatly reduced representative set of frames to represent a video shot).

As per claim 3, Yeo et al. do not suggest temporal distance. Oguz et al. teach attributes are compared to at least one length threshold to detect a scene change in the MPEG video sequence – col. 6, 2<sup>nd</sup> paragraph; compute a degree of coincidence between significant edges in a current frame and significant edges in a prior frame to within a distance and temporal distance ...- col. 8, 2<sup>nd</sup> paragraph; to detect edges, ...code length is compared to a threshold length to produce a bit indicating the presence or absence of an edge... if the threshold length is too large, only the strongest edges will be detected. If the threshold length is too small, some features will mistakenly be detected as edges, the false alarm rate will increase...- col. 7, lines 18-39. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Yeo's

Art Unit: 2163

teaching and Oguz's teaching to allow different categorization/clustering method to be utilized.

As per claim 6, Yeo et al. teach grouping shots by their proximity values and it is preferred to have a shot left as a single cluster/new cluster than to have it grouped into other clusters not in close match... automatic clustering schemes for scene transition graph building can be made at multiple levels. At each level, a different criterion is imposed... In the top levels of the hierarchy, subgraph properties and temporal structures, such as discovering repeated self-loops and subgraph isomorphism, can be explored to further condense the graph – col. 9, lines 1-67. (the automatic/repeating clustering process would stop after the potential merging/clustering of two nodes give rise to an increase in energy... Yeo et al. teach “it is preferred to have a shot left as a single cluster than to have it grouped into other clusters not in close match” – col. 9, lines 16-18)

***Allowable Subject Matter***

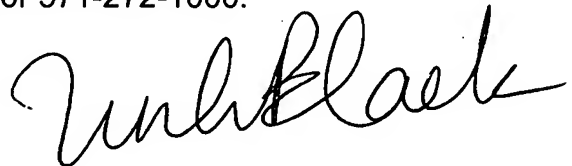
Claims 4-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LINH BLACK whose telephone number is 571-272-4106. The examiner can normally be reached on Mon.-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Linh Black', with a stylized, cursive script.

LINH BLACK  
Examiner  
Art Unit 2163

September 19, 2007